MAMMAL-LIKE REPTILES OF AUSTRALIA

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Until 1982 there was no evidence of therapsids, or mammal-like reptiles, in Australia. The seeming absence of these reptiles was indeed surprising, because they are among the commonest of terrestrial vertebrates in the Permian and Triassic sediments of the other Gondwana continents. Since 1982 the discovery of a half-dozen fragmentary specimens has revealed that two or three types of therapsids may have inhabited Australia during the Early Triassic.

All the specimens so far discovered are from the Arcadia Formation of southeastern Queensland. Aside from rare therapsid fragments this formation has yielded evidence of palaeoniscoids, the subholostean *Saurichthys,* lungfishes, diverse labyrinthodont amphibians, procolophonians, a thecodontian, and small lizard-like reptiles. This fauna is probably similar in age to the well-known *Lystrosaurus* Zone fauna of southern Africa and its equivalents in Antarctica and India (Thulborn, 1986).

The first therapsid specimen to be recognized was an isolated quadrate bone with morphological peculiarities unique to dicynodonts (suborder Dicynodontia; Thulborn, 1983). This specimen might actually represent the cosmopolitan zone-fossil *Lystrosaurus*, as was suggested by King (1983), though in reality there is insufficient evidence for identifying it to the level of genus. Subsequent discoveries of dicynodont material comprise a piece of squamosal, collected by Dr Mary Wade (Queensland Museum), and a portion of maxillary tusk. Neither of these fragments allows identification to genus level. While the evidence is, admittedly, rather scanty, it does indicate that at least one form of dicynodont was present in Australia during the Early Triassic. The Australian dicynodont material is tentatively assigned to the family Kannemeyeriidae, which, according to Cluver and King (1983), includes all dicynodonts of Triassic age.

The remaining three fragments are even more frustrating. Two small centra collected by Dr Anne Warren (La Trobe University) find a close match in certain cynodonts (suborder Cynodontia), though, once again, the material is so imperfect that it cannot be identified beyond "probably cynodont". The last specimen is potentially the most informative: it is the rear end of a small skull which has an occipital surface similar to that in small therapsids, including cynodonts. Unfortunately this skull fragment is embedded in haematite which is proving difficult to remove, even with the aid of thioglycollic acid.

The therapsid material discovered to date, though rare and fragmentary, does carry some interesting implications. It confirms that the vertebrate- bearing horizon of the Arcadia Formation may be broadly equivalent in age to the African *Lystrosaurus* Zone — despite its unusual preponderance of labyrinthodont amphibians over therapsids. The discovery of cynodonts, if confirmed, might indicate that mammals are just as likely to have originated in Australia as in any other continent. And, finally, the identification of Early Triassic cynodonts, in conjunction with the recent discovery of a Cretaceous mammal (Archer *et al.*, 1985), would afford reasonable hope that mammals were present in Australia through the Late Triassic and the Jurassic.

☐ *Therapsida, Dicynodontia, Cynodontia?, Triassic, Queensland, Australia.*

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